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SPASMODIC WRY-NECK

DOCTER'S BOOK

SPASMODIC MOVEMENTS OF THE HEAD, FACE AND NECK.

BY

NOBLE SMITH, F.R.C.S. ED.

LECTURER TO 'ALL SAINTS' CHILDREN'S HOSPITAL.

LONDON

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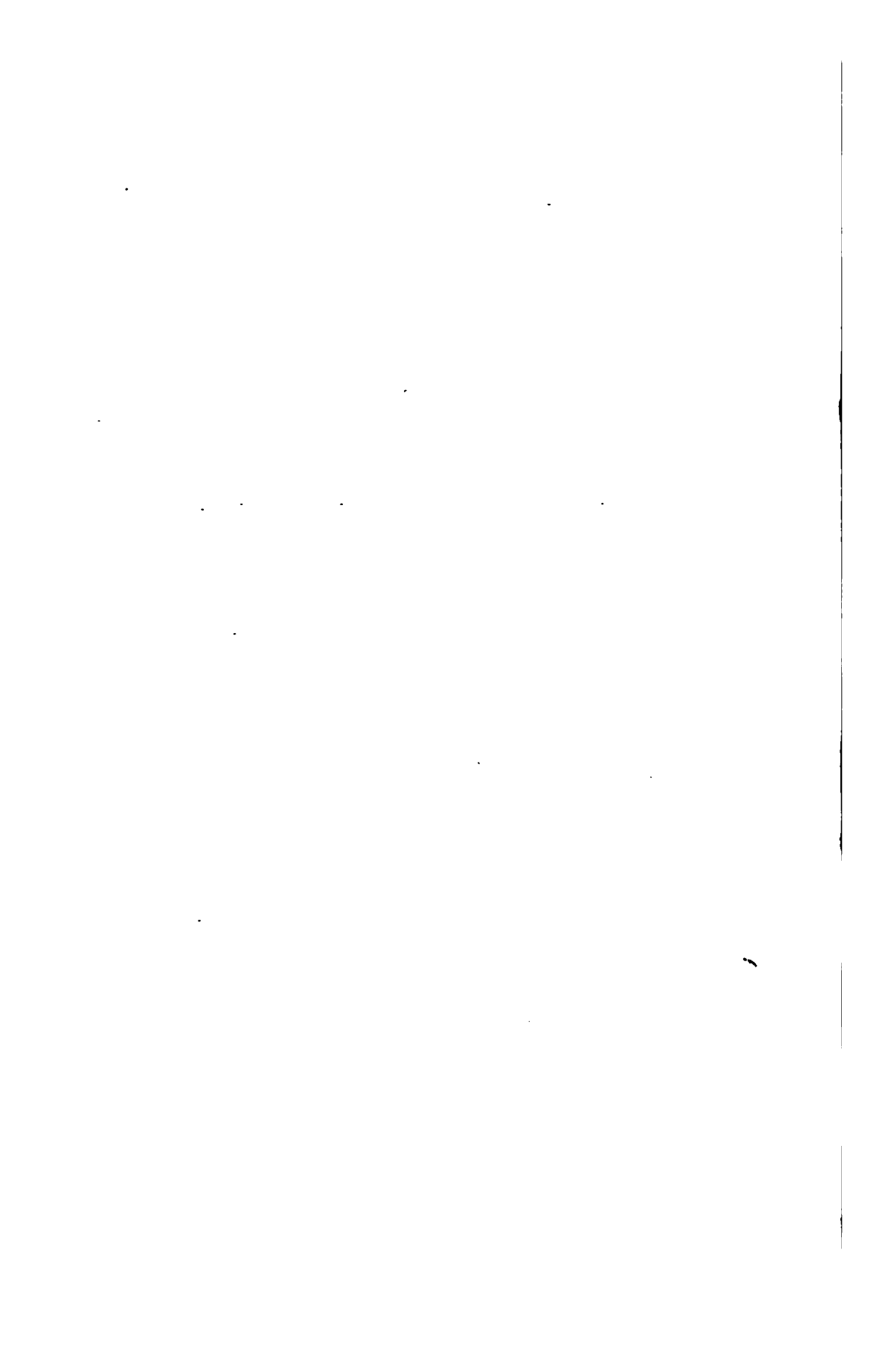
PREFACE.

IN the following pages I have thought it preferable, in referring to other writers, to quote to a great extent the author's words rather than give only my own views of their reports and opinions.

In order to further insure correctness I submitted *proofs* to most of the writers whom I have quoted, and I am much indebted to them for their kindness and courtesy in sending me corrections and suggestions which I have gladly made use of.

NOBLE SMITH.

*Queen Anne Street, Cavendish Square,
London, 1891.*



SPASMODIC WRY-NECK.

THE objects of this publication are :

First. To show that neither drugs, local applications, nor other general methods are of any permanent use in the treatment of well-established Spasmodic Wry-neck.

Secondly. That electricity has failed to do any permanent good except in some recent cases which probably differed entirely in their nature from those referred to.

Thirdly. That nerve stretching, although successful in a few cases, cannot be depended upon as a certain remedy.

Fourthly. That section and ablation of a piece of the spinal accessory nerve is absolutely certain to remove all spasm from the muscles supplied by that nerve, and is very likely to remove spasms set up in other muscles, although other nerves are apparently involved.

Fifthly. That the most certain and satisfactory plan of operation is section of the nerve upon the inner side of the sternomastoid before it enters the muscle.

Sixthly. That when other muscles remain spasmodically affected (as in case 1 of the writer, where the rotators at the back of the neck were involved), the spasms may be removed by section of the nerves supplying those muscles.

Seventhly. That the operations of section of the spinal accessory nerve, and of the posterior roots of the cervical nerves, are not followed by serious inconvenience to the patient from paralysis of the muscles.

Eighthly. That there seems to be no risk of the reunion of the nerves and return of the spasms after operation.

Ninthly. That it seems probable that other convulsive movements of the head, similar to those described in case 2 of the author, may be remedied by section of nerves.

Spasmodic Wry-neck consists of spasmodic action, more or less violent, of some of the muscles of the neck, producing jerking, irregular, but, as a rule, almost constant convulsive movements of the head to one or other side.

The sterno-mastoid of one side is usually alone or chiefly implicated, but other muscles may also be affected either primarily or during the progress of the affection.

Spasmodic Wry-neck occurs in both sexes. The age at which it usually commences is about thirty, or later in life. It seems to be more common among intellectual and well-cultured people, and among members of families who show a disposition to develop disorders of the nervous system. It has been known to originate or recur during pregnancy.

The progress of the affection is one of gradual increase as regards violence of spasm, implication of other muscles, and degree of deformity. The patient's condition is from the first a very distressing one, in consequence of the awkward position of the head; the incessant movement; the pain, which may vary in nature and locality, and (often also) the interference with sleep. In some cases the patient has temporary power of control over the movements by the exercise of great determination, but in others these attempts only increase the action. If the sterno-mastoid is alone in action, the head will be drawn towards the shoulder of the affected side, and bent slightly forwards and twisted so that the face is turned towards the opposite side, and the ear of the affected side is drawn towards the sternal end of the clavicle. If, in addition, the trapezius muscle is involved, it tends to draw the head backwards and outwards, and so the direction will be more or less entirely sideways; other positions may occur depending upon the muscles implicated.

Nature of the Affection.—That Spasmodic Wry-neck depends upon abnormal nerve action there can be little or no doubt; but to fully discuss the nature of this action would hardly come within the scope of this publication. The causes are, as a rule, obscure, and probably vary in different cases; we may, however, assume that some central nervous lesion is present.

It would seem that when one nerve is alone involved, the lesion can hardly be quite central, or it would affect both sides alike. In considering this point, the following observations are of interest.

Dr. George Johnson, in a paper upon Laryngeal Symptoms from pressure of aneurismal and other tumours upon the vagus etc., published in the *Transactions of the Medical and Surgical Society*, 1875, refers to Dr. Lockhart Clarke's description of the fibres and origin of the spinal accessory nerve "decussating

“ in three places across the median line of the medulla oblongata, “ and thus connecting the spinal accessory nuclei of the opposite “ sides. The spinal accessory nerve is known to be the source “ of the motor fibres in the laryngeal branches of the vagus, “ and in the structural arrangement thus demonstrated by Dr. “ Clarke whereby the spinal accessory nuclei of the two sides “ are brought into close union with each other, we appear to “ have the explanation of the normal bilateral action of the “ laryngeal muscles.”

Reference is made to Dr. Broadbent's hypothesis that the muscles which act bilaterally as in the case of the larynx must have their central nerve nuclei “ so closely connected by com- “ missural fibres that the muscles of each side receive their “ nerve supply from both sides of the brain in proportion to the “ completeness of their bilateral action.”

In the *Pathological Transactions*, vol. xxvi. p. 252, is described a case of Spasmodic Torticollis occurring in a fowl. Rotatory movements took place until the bird became exhausted, after which they would come on again. “ By placing the bird in a basket and fixing its head, the convulsions ceased.”

A *post-mortem* examination was made, when “ a large ecchy- “ mosed spot was found over the 2nd cervical vertebra, and three “ clots of blood about the size of millet seeds under the outer “ covering of the cord on the left side, but there was no apparent “ lesion of the cord. There was no disintegration.” The case was reported by Dr. Edwards Crisp.

The spinal accessory nerve being that which is chiefly or alone involved, the disturbance must be either in the course of that nerve or in the spinal cord near its origin. The first onset of spasm may follow a severe nervous shock, or an accident involving a strain of the neck or a blow in that region, or exposure to a draft of cold air, or some other less local cause. In other cases no apparent cause exists, and then constitutional disease, such as Syphilis, Gout or Rheumatism, may be inquired for.

Although typical Spasmodic Wry-neck is not supposed to occur before adult age, yet we may, I think, associate with this affection some cases which have occurred in childhood.

In Childhood.—Dr. J. M. Coley, writing in the *London Medical Gazette* upon Wry-neck in children, recorded two cases of a spasmodic nature. One was in a boy aged eight, who had suffered for four days from “ involuntary painful contraction “ of the muscles of one side of the neck, which were almost “ continually drawing the head towards that side. The disease “ had proceeded from cold, produced by the head resting “ several hours against a damp wall. The disease was ac- “ companied with quotidian fever.”

Leeches and a blister to the nape of the neck, arsenite of potash and quinine and sulphate of magnesia, and subsequently (after improvement) belladonna, quinine and magnesia were given, and the patient was cured in about a week.

The other case was a girl, aged twelve, who had suffered for about a week. "The muscles of the neck on the side affected were almost constantly in a state of involuntary painful convulsion, so that the patient was obliged to hold her hands to her head to relieve the inordinate action of the muscles; in this case the accompanying fever was remittent." One drachm of sulphate of magnesia and two-thirds of a grain of extract of belladonna were given every eight hours, and a week later the patient was discharged perfectly cured.

These cases seem to differ from the instances supposed to be rheumatic, and called "acute torticollis," occurring in children, and referred to by Dr. Henri Roger (*Archives Générales de Médecine*, January, 1867) as peculiar to that age. Probably in the rheumatic cases the muscles are chiefly attacked, and not the spinal accessory nerve. Doubtless the muscles might be alone affected in adults, but it seems unlikely that under such circumstances the attack would be more than temporary.

Typhoid fever (?)—In a letter published in the *British Medical Journal*, October 29th, 1881, Gerald E. Barrow, M.B., writes:

"Three children, a boy aged about thirteen and two girls respectively about eleven and nine years of age, brother and sisters, came from the North of England, the boy by steamer the girls by rail, and not on the same day. All three were attacked upon arrival in London with torticollis; the boy not apparently otherwise ill, and is now in his usual health; the girls have both developed sharp attacks of Typhoid Fever. Was the torticollis in all three merely an extraordinary coincidence? or had the fever poison had anything to do with it, the fever 'aborting' in the boy?"

Miasmatic Wry-neck.—In the *Lancet* of January 4th, 1879, a reference is made to a case recorded by M. Jules Simon, supposed to be due to "Miasmatic causes." A child, aged four, had suffered from several attacks of intermittent fever. He was found to be suffering from "spasmodic contractions of the sterno-mastoid, which commenced every day about the same time, and lasted from four to five hours. The child was becoming pale, losing flesh and appetite."

Fifty centigrammes of quinine were given every day. The child commenced to improve on the day after the treatment was commenced, and was well in six days.

Wry-neck from Injury.—A case is reported in the *Lancet*, April 17th, 1880, of a child aged three years, in whom temporary

Wry-neck followed a severe blow upon the sternal end of the clavicle, the blow having caused "effusion into the sheath" of the sterno-mastoid to the size of a pigeon's egg. The destruction of thread worms from which the child suffered was supposed to hasten the cure, but possibly the Wry-neck was simply a matter of posture in order to relieve the pain which was caused by extending the injured muscle. The assumption of a Wry-neck position was considered to be the cause of the permanent deformity in Annandale's case to be presently reported; but in that instance there were undoubted spasms producing the deformity when any attempt was made to rotate the head towards a natural position.

Disease of the upper cervical vertebræ may cause Wry-neck, but such cases differ materially from those we are considering. There is as a rule much less spasm. The appearance of the patient is different. Instead of the firm appearance of all the parts involved, and the active nature of the contractions, we find an appearance of relaxation of the neck, as if the patient were allowing the head to twist in order to avoid the pain which a normal position would cause. The patient's expression is one rather of general distress than simply of acute pain from spasm, and the countenance assumes a pathetic appearance which is very characteristic. A fortnight after I commenced treatment of the case of spasmodic Wry-neck No. 1, upon which my operations were first performed, an instance of Wry-neck from caries came under my treatment. It was the case of a lady, aged 42. She had been treated by electricity, which had naturally aggravated her symptoms. Fixation by apparatus soon gave her ease, and in six months she was cured.

In a youth who suffered in the same way, much doubt had been expressed as to the position of his head being due to disease. However, I thought it real, and treated the case with caution. A few years afterwards the patient was brought to me—he had completely recovered; but there was a sharp projection of the 2nd and 3rd cervical vertebræ, showing conclusively that caries had existed.

At a meeting of the Société de Chirurgie in 1861, M. Legouest exhibited a soldier who had suffered from Spasmodic Wry-neck for eighteen months, "and no treatment had been of any avail." "If the patient kept quiet, he could hold his head quite straight, but as soon as he began to walk it fell towards the right side and a little forwards, and could only be brought back to its right position by the hands; when this was done, the patient felt a cracking noise at the left mastoid process." M. Legouest thought this was disease of the atlas, but M. Bouvier and M. Robert "declared it to be a purely muscular affection." It was

further reported (*Medical Times and Gazette*, September, 1861) that M. Debout had "recently seen a similar case (?) in which "faradisation of the antagonistic muscles proved curative."

Carious Teeth are capable of producing this affection, as shown by a case recorded by Mr. John Mitchell.¹ Spasmodic movements of the tongue and face, and subsequently of the neck so that the chin was drawn down to the left shoulder, were, after resisting other treatment, cured by removal of some very severely diseased teeth.

Hysterical cases.—Muscular contractions may occur in any part of the body in connection with hysteria, and therefore we may meet with hysterical Wry-neck. There may be hysterical symptoms present, and yet the Wry-neck may depend upon some other cause. It may be that patients of an hysterical disposition are more prone to wry-neck contractions, but this does not prove that there is not some organic or functional direct cause for the spasms.

Mr. Skey, in his "Original Lectures" published in the *Medical Times and Gazette*, October 13th, 1866, refers to several cases of muscular contractions due, he considered, to hysteria, and among them was a case of Wry-neck. Whether his diagnosis of the cause was correct or not, it remains, that division of the *muscle* was performed, but that no permanent good effect was produced.

In the *Medical Times and Gazette*, December, 1861, a case is recorded as occurring at St. Thomas's Hospital, under the care of Dr. Peacock, as hysterical, the description of which proves it to be, I think, dependent upon some more tangible cause. The case was that of a girl aged fifteen. Pain first occurred in the neck August 18th, 1860, and the head was drawn to the left side.

The pain continued, but the spasms would cease for a few days occasionally: her health was otherwise good. These symptoms continued for four months, when she was admitted to the hospital. This case seems to have been considered hysterical because "No pain in the spine was elicited by percussion or pressure; there was no loss of power in the arms; her father was in a lunatic asylum; and the contraction "disappeared under chloroform."

There were no 'other' symptoms of hysteria except the contraction. Two grains of sulphate of zinc, a quarter of a grain ext. of belladonna in infusion of columba three times a day, and aloeic pill every night were administered. The sulphate of zinc was gradually increased until twenty grains were given three times a day, when some sickness was produced, and it was

¹ *Medico-Chi. Trans.* vol. iv. 1813.

discontinued. About a fortnight after admission, seven grains of sulphate of zinc, twenty drops of foetid spirits of ammonia in infusion of valerian were given three times a day.

The patient was placed under the influence of chloroform on January 3rd, 10th, 17th, and 24th, and once a week until February 11th, when there was for the first time a little improvement. She got better, but was not cured, and probably some permanent lesion kept up the spasms. In Spasmodic Wry-neck the spasms generally are relieved by chloroform, being a very different matter from Congenital Wry-neck, where the muscle is permanently contracted and is not relaxed by an anæsthetic.

Spinal Irritation.—A class of cases in which muscular contractions may occur in various parts of the body, although only rarely in the neck, are those of "spinal irritation."

Dr. Buzzard records a case¹ of spasms affecting the head and arms, in which the sterno-mastoids acted very strongly, in a girl aged twenty. After sulphate of zinc had failed to do any good, liquor arsenicalis, beginning with five minims three times a day, and gradually increased to double the quantity, lessened the movements by degrees until they were hardly perceptible. There were also epileptic fits. Dr. Buzzard's experience was that it was only in young people that recovery took place from use of drugs.

Failure of drugs to do good.—Dr. John Cross wrote² to ask for advice as to the treatment of a case under his care, which he described as follows:

"A gentleman aged 60, tall, and somewhat full-blooded, has for some months been suffering from a painful spasmodic action of one of the sterno-mastoids drawing the face slowly but surely round to the shoulder, and resisting the use of the patient's hands to restore the head to its proper position. This spasm sometimes occurs every few minutes, and is less frequent when the attention is fixed on some other object, and never prevents sleep at night. The patient is temperate, has a fair appetite and good digestion, and in other respects is healthy, except that he has occasionally rheumatic and neuralgic pains in different parts of the trunk, and once or twice has had distinct threatenings of a classical attack of gout. The lower limbs are somewhat erythematous and ecchymotic, and the heart's action is rather weak, but there is no evidence of organic disease of either heart or kidneys. I may mention that for some time past there has been a great deal of worry connected with business.

¹ *British Medical Journal*, Dec. 10th, 1881.

² *British Medical Journal*, March 13th, 1880.

“The treatment has included alkalies, the iodides, and
 “bromides of potassium, colchicum, quinine, arsenic, valerianate
 “of zinc, and cannabis indica, while various external remedies
 “have been tried, such as iodine, sinapisms, atropine ointment,
 “compound camphor liniment, and belladonna and aconite
 “liniments with chloroform.

“Due attention has been paid to diet, open-air exercises, and
 “other hygienic measures, while the bowels have been carefully
 “regulated, but the patient still remains unrelieved. It will
 “not escape notice that the case in some of its points bears
 “analogy to chorea.”

In answer to this letter I wrote in the following week's
Journal recommending a further trial of sedatives, and if that
 failed to relieve, I suggested stretching the spinal accessory
 nerve, and that failing, excision of a piece of the nerve as
 practised successfully by Mr. Campbell de Morgan. If the
 latter operation failed, I suggested repeated section of the
 tendon of the muscle, in order to relieve the patient from the
 great distress of the spasms.

In my case, No. 1, p. 46, which I record in this volume, it
 will be seen that ten years later I carried out the treatment
 I then advised. Finding that local remedies and drugs were
 of no use, stretching the nerve had but a temporary effect,
 while excision of a part of the nerve was absolutely successful
 as far as the sterno-mastoid was concerned, and that the case
 was ultimately cured by a similar operation upon the posterior
 branches of some of the cervical nerves supplying the muscles
 of the back of the neck, which were also at fault.

Conium.—Dr. John Harley records (in a paper read before
 the Royal Medical and Chirurgical Society, December 9th,
 1873) the use of conium in these cases.

Case 1, W. H., age 44, had been, for the two years preceding
 the spasms greatly overworked. First the arm, then the neck
 became attacked, and after four months the head became
 rotated. The spasm gradually increased in severity, notwith-
 standing treatment in several of the Metropolitan hospitals,
 “until natural sleep became almost impossible and life a
 “burden.” The face was drawn permanently to the right, the
 head extended, and rotated in the same direction by a constant
 succession of jerks. The patient estimated the spasmodic
 force of the cervical muscles at 50 lbs.

Treatment.—Succus conii in one ounce doses, increased half
 an ounce each day until the tenth day, when he was taking three
 ounces twice a day at 11 a.m. and 9 p.m.; this was continued
 until the nineteenth day, and from this date to the fifty-third,
 day. With an intermission of two days preceding his appearance

at the Society, he took a single dose of three ounces every morning.

From the fifty-third to the fifty-seventh day he took four ounces twice a day with an interval of twelve hours between each dose. From the fifty-seventh to the seventieth day, with an intermission of one day, he took three and a half ounces every morning.

Effects of the hemlock.—While the patient was thoroughly under the influence of the drug the spasm was “greatly weakened, and about the forty-eighth day it became subservient to the will,” “the jerk was rarely seen, the movement of the head consisting of a slow rotation or twist.”

The report states :—“A fluid ounce of the succus caused some giddiness and weakness of the knees, lasting for three-quarters of an hour; short of two fluid ounces there was no marked effect on the spasm. Three and a half fluid ounces caused great muscular relaxation, and at the end of two or two and a half hours, when the action had attained its maximum force, there was inability to rise from the sitting posture or to walk without assistance, and as often as the knees were flexed to a right angle or a little less he fell, and was unable to rise without assistance” Complete ptosis, relaxation of the orbicularis muscles, dilatation of the pupils, double or multiple vision, unless he carefully rested his gaze on a near object, until the optic axes converged, etc. “The lower jaw had a slight tendency to hang, and the force of the masseters and temporals was barely sufficient to divide a piece of bread placed between the incisors—as the patient said: he ‘could not chew nor turn the food in his mouth.’ Deglutition was slow, painful, and imperfect, and the meal was laid aside until the end of the third or fourth hour.” . . .

This patient remained some weeks in the hospital after he was shown at the Society. He was then admitted into Guy’s Hospital under the care of Dr. Frederick Taylor. Here he was again subjected to treatment with hemlock, and it required again large doses before effect could be made on the spasms. Dr. Taylor remarks, “After taking the juice in efficient doses for five weeks, I discontinued it, to watch for the return of the spasm, and to form an opinion as to ultimate cure. Before the expiration of a week the twitching movements were increasing, and as he was at that time unwilling to resume the conium on account of the peculiar mental depression which it caused, I ordered the continuous current to be applied daily.”

It would thus seem that this case was after all not permanently benefited by the conium.

This can hardly be considered a very satisfactory result of the treatment, as it would seem that it was only while the patient was decidedly under the influence of large doses of the narcotic that the spasms were modified, not, it will be observed, entirely removed, besides which the immediate effect of the drug was very unpleasant to the patient.

Dr. John Harley's case, 2.—This was an acute case, treated in the same way as case 1. After being relieved from spasm by the hemlock, the report states: "The tendency to rotation of the head when tired, especially by walking, still continues." Subsequently this patient was perfectly cured by the treatment. Dr. Harley informs me that he saw him several years after, and he had remained quite well.

Case 3 was one of spasms of the extensors, chiefly of the deltoid and triceps, of the right arm and of the right pectoralis major.

Dr. Harley remarks: "Hemlock acted upon the motor centres; and while it held in check one set of muscles, the corresponding muscles of the other side improved in nutrition and power. When under the influence of hemlock, the whole muscular system was completely relaxed—the muscles of the face and head to a greater degree than those of the rest of the body." Dr. Harley thought that the juice would be useful in trismus and in spasm of the orbicularis and gullet. "Hemlock was totally destitute of anæsthetic properties; and there was no danger" in such large doses as described.

Dr. Harley's cases show the great distinction that should be made between acute (recent) and chronic Wry-neck. That whereas the former may be sometimes cured by energetically administered medicinal remedies, the latter resist all treatment except operation upon the nerves.

Electricity.—In 1855 some cases of spasmodic action of the muscles of the neck causing Wry-neck are recorded as being cured by faradisation of the antagonistic muscles. M. Dubout (*British and Foreign Medical and Chirurgical Review*) relates a case of *torticollis posterior* caused by spasms of the rhomboids and levator anguli scapulæ, where *three applications of electricity* to the serratus magnus cured the case. Duchenne records a case of spasm, in clavicular portion of the trapezius, cured by faradisation of the trapezius of the opposite side; also an instance of "distorted face from tonic spasm of the zygomaticus minor, cured by causing contraction in the muscles of the opposite side. M. Guitard relates the cure of similar deformities."

Dr. Althaus records two cases¹ of Spasmodic Wry-neck which

¹ *Medical Times and Gazette*, May 25th, 1861.

he treated (*he at first thought*) successfully by electricity. A lady, aged 34, unmarried, had suffered for 18 months from spasmodic contractions of the left trapezius and sterno-mastoid muscles.

The first symptoms had occurred after a violent emotion caused by witnessing an accident in the street. "At first the "contractions were slight and only occurred when the patient "was excited, when in society or if suddenly spoken to. The "affection gradually became stronger and more troublesome. "She was treated at first by blisters to the neck and purgatives, "but did not experience any benefit from them. At a later "period of her illness she consulted Dr. Todd, who prescribed "the valerianate of zinc in two-grain doses twice a day, and she "thought she had observed a slight improvement after it; but "as, after having taken it regularly for two months, she was still "a severe sufferer from her complaint" upon the advice of Dr. Todd she consulted Dr. Althaus. Electricity was applied to the antagonistic muscles, and in about a month the equilibrium between the two sets of muscles was so entirely re-established that not a trace of the affection was observed, even when the patient was excited in any way. The general health also improved in consequence of the changed mode of life now adopted by the patient, and menstruation again became normal.

This case seems to have been essentially hysterical.

Another case described by Dr. Althaus was that of "a brewer "from Hampshire, aged 40, a strong healthy man, who, with the "exception of what he described as 'bilious headache,' from "which he now and then suffered, had never been ill before "the present affection came on. Three months ago he first "noticed that his head was inclined to fall towards the left "side. He was unable to assign any exact cause, but mentioned "that shortly before he first felt ill, when driving, his horse fell "and broke its neck, which gave him a great shock. He had "also had much anxiety lately, and admitted having slept on a "damp couch shortly before being attacked by the spasms. The "latter affected the left side of the neck and gradually became "so much worse that he was constantly obliged to hold his "head in the right position with the left hand, so that the latter "became in a measure useless. He was no longer able to dress "himself. His food was obliged to be cut for him, as he could "not hold the knife and fork. He was also troubled at night, "for if he attempted to sleep on the side, as he was accustomed "to do, his head would begin to tremble, so that he was obliged "to lie straight on his back. He could then sleep well, and "generally felt better in the morning than at other times of the "day. The treatment at home consisted of laudanum, calomel, "blisters, leeches and cupping, but it had no beneficial effect

"whatever." He then used a veratrine ointment for a time, applied to the nape of the neck. The left trapezius and cleidomastoid were found more strongly developed than on the right side where they were soft and flabby. On applying the Faradic current the same phenomena were produced as in the case first described, although in a more considerable degree. This was considered more muscular disease than one of emotional kind. A course of faradisation was therefore applied to the affected muscles.

"Immediately after the first application, which lasted for ten minutes, the patient felt easier, and could hold his head straight for a short time without being obliged to support it with the hand. The improvement was now so rapid that after a few other applications of electricity in the way described, the patient was no longer obliged to hold his head with the left hand, so that he could feed and dress himself again without aid. He also could again sleep on the side without being disturbed by trembling of the head. I was therefore hopeful of a perfect cure; but the patient, anxious about his business, felt so unhappy in London that he left town before he was quite cured, after having stayed here less than a week."

Probable relapse of the above Cases.—Dr. Althaus in a paper read eighteen years subsequently before the Clinical Society¹ upon a case of disease of the spinal accessory nerve, in which electricity failed to cure the case, states that in six other instances he had seen, treatment was also unfavourable, so we can only infer that the patient whose cure is above recorded ultimately relapsed.

The case described upon this latter occasion was that of a married lady, aged fifty-three, in whom spasm of the sternomastoid and trapezius muscles of the left side had come on, apparently in consequence of mental anxiety, and had existed for five months. The spasm was incessant, the patient being unable to keep the head steady for a single instant. Muscular rest was only obtained during sleep, but the jactitation commenced again on waking in the morning. There was no hypertrophy of the muscles. The patient was, in consequence of the affection, utterly disabled from following her usual occupation, and the general health suffered; there was constant deep-seated pain upon the left side of the neck, but there was no trace of any other disease. The treatment consisted in the application of the voltaic current to the region of the nerve about three times a week. Cannabis indica and belladonna were given

¹ The report is taken from the *Lancet* of February 1st, 1879, and partly from the Transactions of the Society.

internally, and a subcutaneous injection of m. iv. to m. viii. of liquor arsenicalis upon six occasions, morphia was also injected, and belladonna and chloroform liniment were applied externally; *but this treatment remained ineffectual*, except that some temporary relief followed the injection of arsenic and morphia.

In six other cases which had come under Dr. Althaus' notice the result of the treatment had also been unfavourable. He suggested stretching of the spinal accessory nerve for any obstinate case in which the patient might be determined to seek relief. He thought that the case recorded differed from those which might arise from deep-seated brain affections. At the discussion which followed Dr. Allen Sturge said he could recall five similar cases; one was associated with all the symptoms of disseminated sclerosis, justifying the belief that the torticollis was due to a patch of sclerosis at the nucleus of the spinal accessory. The patient was a female, and had clonic torticollis of the right side. Another case, a female thirty-two years of age, of neurotic tendency, developed clonic torticollis after recovering from an attack of melancholia. The spasm was increased whenever she was out of health. In two other cases, one of a female about fifty years of age, and the other a male, between forty and fifty, the torticollis was associated with spasmodic movements of the arm. None of the cases were much benefited by treatment.—Dr. F. Taylor said that in a case under his care last year, with unilateral torticollis, he had applied the continuous current to the muscles, and in addition prescribed bromide of potassium for a considerable time. After two or three months of this treatment, the patient was considerably better. When last seen the patient, who had since passed from notice, complained much of stiffness of the neck.—Dr. Mahomed said there was a case in Guy's Hospital under the care of Dr. Wilks, in which the platysma was affected, so that on the least excitement the mouth was agitated. The continuous current gave some relief.—Mr. Marrant Baker said that he had had one such case under his care, equally uncontrolled by treatment with those related by Drs. Althaus and Sturge. He had intended to divide the spinal accessory nerve, but the patient left the hospital.—Mr. Parker said that in one case Mr. Rivington excised a portion of the spinal accessory nerve, but the movements continued.

Mr. Rivington wrote in the *Lancet* of the week following that in which the above report appeared, to state that Mr. Parker's statement upon his (Mr. Rivington's) case that the movements continued was not quite correct. The sterno-mastoid remained perfectly quiescent, but there was some movement for a few

“the passage of a current, one pole being held in the hand
“and the other being placed over the upper part of the cervical
“spine. The entire sitting occupied about twenty minutes.

“Her improvement was marked and rapid. On March 1st”
(3rd day of treatment) “she stated that ‘her head had hardly
“twisted at all since the electricity yesterday.’

“The treatment was repeated daily and the pain soon com-
“pletely disappeared, and the spasms became gradually lessened.

“After a very few days the spasm became amenable to the
“voluntary control of the patient—that is, that as long as the
“head was kept turned to the right, no spasm occurred; but if
“the chin approached the line of the sternal notch, the head
“was suddenly twisted over to the left shoulder in the old style.
“At first the head was always kept very much to the right side,
“and, to use the patient’s expression, ‘it was only when she forgot
“herself,’ and allowed the head to assume a normal position,
“that the spasms occurred. The case, which originally was one
“of left clonic spasm, would have appeared, about the middle
“of March, to have merited the name of a right tonic spasm.

“At present the spasms are only of very rare occurrence, and
“the head is carried so slightly turned to the right as to be
“hardly noticeable.

“At first the patient could not sleep on her right side because
“that position brought the chin to the middle line, and spasm
“followed; and it was not till the middle of May that she slept
“on the right side.”

“The patient left the hospital on April 10th, being quite well
“enough to resume her ordinary household duties.

“*She was warned, however, that any attempt to continue her old
“occupation of needlework would almost undoubtedly result in the
“return of her old symptoms.*” The italics are mine.

The case was thought to be analogous to writer’s cramp, and
to have been produced by the great strain to the muscles of the
left arm in holding the heavy materials at which the patient
worked. The strain producing “chronic fatigue” of the muscles.

“This condition of the muscles seems to have produced an
“irritable and painful condition of the spinal accessory nerve;
“for although this nerve is spoken of as being entirely motor in
“its function, it is nevertheless sensitive when irritated. There
“is no more painful process than the faradisation of the branch
“of this nerve which supplies the trapezius. The irritation of
“the terminal branches of the left spinal accessory seems
“ultimately to have been reflected to the terminations of the
“nerve on the opposite side—its antagonist—and to have pro-
“duced spasmodic contractions of one of the muscles supplied
“by it, viz. the right sterno-mastoid.”

“Now spasms are of very rare occurrence, and only occur
“‘when she is flurried.’”

Summary of the treatment of the above case.—The cause (the needlework) was first removed, and then the nutrition of the muscles was restored by exercises which the electricity alone rendered possible.

Although the result in this case was comparatively successful some spasms remained and there seemed a probability of a return upon provocation. Excision of a part of the nerve would have saved a great deal of tedious treatment and have been permanently curative. There would then have been no necessity for the patient to give up her means of livelihood.

The following case appears in *Guy's Hospital Reports*, vol. xviii. p. 141 (reported by Mr. C. Knott). “Alfred —, “æt. 37, admitted Feb. 28th, 1872. Works at oil-cloth factory. “Always enjoyed good health, and his habits were steady and “regular. Never had any severe illness. Exposed to cold. “About a twelvemonth since he found his head becoming “gradually drawn to one side, his face looking to right shoulder, “the muscles of the neck stiff, and some little difficulty in “swallowing. This continued until admission.

“Patient looks well, and whilst lying on his pillow his com-
“plaint is scarcely apparent as he moved his head from side
“to side; but immediately he rises, the left sterno-mastoid
“contracts, and his head moves to the right side.

“Faradisation was used to the left sterno-mastoid muscle,
“and caused marked contraction.

“This was continued daily, and after some time the muscle
“seemed more readily affected by a less strong current. It
“seemed, indeed, as well as the trapezius, to have greater
“excitability than the muscle on the other side. The two
“forms were tried for six weeks, but without any permanent
“benefit, and were, therefore, discontinued. He was then
“ordered injections of arsenic for nine days, but without any
“result. He subsequently took bromide of potassium, and
“then tr. cannabis, and on some days he thought he was
“better and the muscles more supple; but he again became
“as bad as before.”

In Quain's Dictionary of Medicine, Dr. Poore states that he had treated another case with good effect by electricity and

exercises, but he does not state how long the patient remained under his observation, nor how long the spasms had existed. He does not mention operation as a means of treatment.

Nerve Stretching.—Mr. F. A. Southam, in a paper upon nerve stretching, read before the Manchester Medical Society, May 4th, 1881, refers to the effect of stretching upon purely motor nerves, like the facial and spinal accessory, as likely to act upon the nerve centres as well as upon the local fibres. This was manifest in one case (the second recorded below), for “immediately the nerve was laid hold of and stretched, “violent straining and vomiting were excited, probably due “to its intimate connection with the pneumogastric nerve.”

The manner of stretching which he employed was as follows: “In each case the nerve was seized with two pairs of forceps, “between which it was forcibly stretched, and a considerable “amount of traction was also made upon its trunk, both in an “upward and a downward direction.”

Case 1. “*Clonic Torticollis; stretching and subsequent excision of “a portion of the spinal accessory nerve.*”¹

Mary S—, aged 53 years. Admitted Sept. 30th, 1880. Clonic spasm of the left sterno-mastoid and deeper muscles and also, subsequently, of the muscles of the left arm, had existed for twenty-three years without intermission.

The spasm was “incessant.” The patient was unable to straighten the head to look over the left shoulder, the left ear approximating to the left shoulder. The general health was nevertheless good. No cause was known.

As no benefit had been derived from previous treatment, the left spinal accessory nerve was stretched on October 7th. The spasms were thus very much diminished, but the improvement was only temporary, for they returned and in the course of four or five weeks were nearly as bad as at first. The only decided improvement was that the patient could turn the head to the left by an effort. As the benefits from stretching were so slight, a portion of the nerve was excised on March 10th. It was exposed, as before, below the muscle and traced upwards through the fibres of the sterno-mastoid.

The nerve was attenuated at this part, as a result, it was supposed, of the previous stretching, and it broke away before Mr. Southam could dissect it high enough to secure all the fibres entering the sterno-mastoid. He adds:

¹ *Lancet*, Aug. 27th, 1881.

“To this fact is, I think, to be attributed the very slight effect which the second operation had upon the case, as it was not followed by any abatement of the spasm, and the condition of the patient was in no way altered from what it had been previous to its performance.”

[It can hardly be doubted that if the nerve had been operated on higher up before it enters the muscle this failure would have been avoided, and a subsequent operation at this point would probably have remedied the error.—N.S.]

Microscopic examination of the portion of nerve removed showed “proliferation of the connective tissue elements of the neuroglia, and also of the nuclei of the primitive sheaths of the nerve fibres, the latter structure being at the same time considerably thickened. In addition to these changes, the medullary sheath of some tubules was much thinned, while in others it had disappeared altogether, the axis-cylinder in some cases alone remaining and presenting its normal aspect. These appearances are not unlike those which occur in the early stages of sclerosis, but in the present instance they are probably the result of the stretching to which the nerve had been subjected, agreeing as they do with those changes which have been observed by Quingvad to follow the operation when performed on perfectly healthy nerves, and being of such a nature as one would expect to find in correlation with the atrophied condition of the nerve trunk itself.”

Case 2. Clonic Torticollis; stretching of the spinal accessory nerve.
 Fred. R.—, aged 14 years, admitted on October the 10th. There was clonic spasm of the right sterno-mastoid muscle. The spasms were not constant, but in paroxysms with very brief intervals. Not only the sterno-mastoid, but the deep muscles of the neck, back, and muscles of both arms were involved, also the legs dragged slightly. “The spasm was much increased in the neck, arms and trunk on any emotional disturbance, and upon attempting to eat and drink he was obliged to fix and steady his head by placing his left hand behind it; otherwise it was only with great difficulty, and apparently with great effort, that he could bring his hand to his mouth.” The symptoms had existed for ten years, commencing in the neck. Treatment for months proving useless, on October 23rd the nerve was stretched. Considerable benefit followed, lasting about six weeks, “when a gradual but general relapse set in, the spasm slowly returning with almost all its original severity, so that two months later, with the exception of a much freer movement of the head to either side, there was very little perceptible benefit from the operation. On seeing the patient again this morning, for the first time for an interval of some weeks, I was agreeably

“surprised to find that a decided improvement had taken place since I last saw him, and he tells me that now the spasm only comes at long intervals, and especially when his attention is directed to it.”

In the following case stretching the nerve was more successful.

Mr. Page, surgeon to the Infirmary, Newcastle-on-Tyne, published a case in the *British Medical Journal*, February 4th, 1888, of a strong muscular labourer, aged 24, who had fallen heavily on his back in a game of football, twisting his neck violently on one side. He was unable to rise and had to be carried home, having lost the use of his limbs. The Wry-neck passed off in two days, and his arms remained paralysed for a fortnight, the bladder paralysed for a few days. In a few weeks the patient could resume work. Three months afterwards he struck his head violently against an iron pipe, fell backwards to the ground, and the neck was again twisted as before. This time the spasms remained. On June 21st, six months after the first and three months after the second accident, the spinal accessory nerve was stretched where it emerges from the sterno-mastoid muscle on its way to the trapezius. On July 21st the patient was discharged, “all clonic spasm having ceased entirely for some time.” There was still, however, some clonic traction of the sterno-mastoid. In the following June the patient was found to be “free from deformity, in good health, and able to do his ordinary duty without inconvenience.”

Treatment by Local Pressure.—A domestic servant, age 22, healthy appearance, was admitted to the Leeds Infirmary,¹ under the care of Dr. Heaton, September 27th, 1878. Tremors of the head and right arm had commenced four years previously after some very hard work. The previous treatment had been cold baths and some internal remedies, and subsequently blisters on each side of the spine, after which the movements ceased for six months. Then the movements of the head began and had continued. They consisted in rapid and forcible rotations of the head (100 in a minute) only when the patient was standing. They ceased when she lay down. There was no pain except from fatigue. Menstruation was regular. She was treated medicinally for several weeks with conium, arsenic and inunctions of belladonna liniment. Some

¹ *British Medical Journal*, February 15th, 1879.

decayed teeth were removed also, but without effect. It was found that "firm pressure with the finger over a spot a little below and anterior to the root of the ear immediately behind the angle of the jaw, had the effect of completely arresting the movement." When removed the movements recommenced. "Galvanic currents between the spine and the pressure-points had no effect upon the movements." An apparatus was constructed to maintain this pressure. After wearing this for about three months she was found to be apparently cured, except that she occasionally had "twitchings in her eye and arm."

The writer referred to the curious pathological fact of morbid muscular movements being controlled here as in some other cases by pressure upon certain points probably acting by arresting the transmission of nervous vibrations reflected from the spinal centre to the affected muscles.

The subsequent history, however, shows that the effect of this treatment was only temporary. Mr. Gustavus Hartridge wrote in the *British Medical Journal* on March 20th, 1880, stating that the case described by Mr. Heaton was then under his care at the Kendal Hospital, the rotatory movements having again returned with their former severity.

The view expressed that the cause of *tonic* contractions stiffening the affected parts is generally the effect of morbid action in the nerve centre, or between that centre and the affected muscle, and *clonic* spasms the effect of reflex action as suggested in this paper, is hardly in accordance with the evidence afforded by other cases of spasmodic Wry-neck.

Thermal Baths.—In *L'Union Médicale* for April 25th, 1876, Dr. Bonnet de Malherbe, of Neris, describes a case which was at first attributed to rheumatism, but as his thermal treatment for rheumatism had no effect upon the malady, he came to the conclusion that the spasms were not rheumatic.

Trousseau (*Clinique*, vol. ii.) mentions a case under the head of chorea.

M. Jaccoud, in his 'Traité de Pathologie,' describes the disease under the head of Hyperkinesia of the nervous Accessorius of Willis.

Dr. John Ogle read a paper upon a case of "Spasmodic Contraction of the Muscles of the Neck" before the Clinical Society, reported in the *Transactions* of that Society for 1873.

G. T., aged 50, a copper and tin-plate worker, a well-made and muscular man, apparently in good health. The head was "jerked somewhat backwards, and to the left side, the chin "being twisted towards the left shoulder, and the right ear "drawn down towards the right shoulder." There was a tendency to frown and "an unusual fixity and smallness of "both the pupils." "The patient complained of weakness "of the limbs generally, but there was no positive deficiency "in power of any of the muscles of the limbs." There was "constant numbness, and formication of the ends of the "fingers of both hands, the skin of which, for about an inch "or more from the tips, had, according to the patient, frequently peeled off, and was on admission unusually smooth, "glazed, and shiny, and insensible to touch, and wrinkled in "places; the nails being in some parts furrowed." He also complained of numbness in the toes. He suffered from headache. The spasms often increased "when the patient was "addressed, and under examination, but not always so; and "always much worse after waking in the morning, and during "the early part of the day," being absent during sleep. Often the spasms were accompanied by much pain. The attack had existed several months.

Thirteen or fourteen years previously he had had a similar attack, in which however the head was drawn more towards the right shoulder, following a fall upon the head. The attack lasted nine months, and subsided after blistering, salivation, and subsequently galvanism.

Mr. Wood, under whose care he first came at King's College Hospital, applied galvanism, and gave gentian and valerianate of zinc, but as the spasms became worse, the galvanism was soon discontinued. Aperients and tonics seemed to do good. Sedatives, such as bromide and iodide of potassium, the former in twenty-grain doses, and chloral gave only temporary relief. Mr. Wood's diagnosis was, "Injury, and probably subsequent "thickening, of the spinal dura-mater or pia mater about the "foramen magnum, . . . implicating the sympathetic on the "vertebral artery, and so affecting the pupils." Dr. Ogle repeated the valerianate of zinc in increasing doses, and by frequent subcutaneous injections of morphia at night with and without atrophine, the spasms were often lessened, and after a good night's rest he felt better, and "the pain in the head had "been greatly diminished by blistering the nape of the neck."

"As this treatment seemed of no avail in producing any "permanent benefit, Dr. Ogle obtained the assistance of his "surgical colleague, Mr. Lee, who divided the tendon of the "sterno-mastoid with only a very temporary benefit."

Mr. Campbell de Morgan was invited to see the case, and he advised division of the spinal accessory nerve, but this advice was not followed. The reason of not doing so does not appear, unless we may obtain it from a reference given by Dr. Ogle to Romberg, who alludes to this operation, as being *attempted* by Dr. Bujalski, of St. Petersburg, and reported by Stromeyer. Romberg was averse to the operation as "independent of the great difficulty(?) of the operation in "the living subject, besides the accessory nerve, branches of "the cervical nerves are distributed to the sterno-mastoid, the "affection of which would be liable to predominate."

Now, when we find that Campbell de Morgan had been entirely successful where many more nerves were involved than in Dr. Ogle's case, it is difficult to understand why any hesitation upon the above score should have been held, and it is also difficult to understand that the idea of difficulty in operating should have deterred a skilful surgeon. This supposed difficulty has seemed to influence other surgeons who have operated on the spinal accessory nerve. Campbell de Morgan and others who have followed his example have exposed the nerve at its exit from the sterno-mastoid muscle and dissected upwards through that muscle. This is a certain method, although not so direct as the proceeding which I thought best to adopt of attacking the nerve above the muscle. This I have done three times, and in each case succeeded without much difficulty in finding the nerve. The details of this method are given in my description of my first case, p. 46.

Mr. Wood operated upon the nerve, at King's College Hospital, once in the case of a man and once in a girl. The former improved and the latter was cured by the operation, combined with the use of a stiff collar. He states that he saw the latter case three or four years later. She was grown up to be a young woman, and quite straight as to the neck.

Brain Injury and Syphilis.—A case is recorded by Dr. G. V. Poore,¹ which differs in many respects from others, and in which the cause was thought to be cerebral. The injury to the head, the syphilis, the peculiarity of the symptoms and the favourable result of a mercurial treatment seem to prove the correctness of this view.

The case, a male aged 36, was sent to Dr. Poore by Dr. Shingleton Smith, of Bristol, and is described as follows:

¹ *Clinical Society's Transactions*, vol. 20, p. 226.

“The patient was suffering from Spasmodic Torticollis of unusual severity. At frequent intervals the head was turned violently towards the right shoulder. The spasm was so strong that the whole body rotated with the head, and not unfrequently the patient was obliged to sink upon the floor, or cling to a chair or couch to prevent himself from falling. It was by far the most severe case of torticollis which I had ever seen, and, following my advice, the patient came into University College Hospital on August 5, where he occupied a private ward.

“A few weeks previously the sternal attachment of the left sterno-mastoid muscle had been divided at Bristol; but this operation had not checked the spasm appreciably. When first I saw him, there was no marked excess in the contraction of the left sterno-mastoid, although previous to the tenotomy Dr. Shingleton Smith assured me that the contraction of this muscle was very excessive. The rotation of the head when first I saw the patient was effected mainly by the right splenius capitis (assisted probably by the right obliquus capitis inferior), which could be felt to be in an extreme state of spasmodic contraction. After the patient had been a few weeks under observation (the re-union of the divided tendon having been perfected), the action of the left sterno-mastoid became far more violent than at first.

“This shifting of the spasmodic action from one rotator muscle to another, and from one side of the body to the other (though no new fact), seemed to preclude us from localizing the lesion which caused the rotation, either in the muscles or the nerves supplying them, for it is very improbable that a lesion should spread from the spinal accessory nerve and sterno-mastoid muscle of one side to the splenius and obliquus and cervical nerves of the opposite side; and it is inconceivable that the latter muscles and nerves should become diseased as the immediate consequence of the former being placed *hors de combat* by tenotomy.

“These facts become comprehensible by referring the lesion to some centre specially associated with the function of rotating the head and having command (to this end) of muscles on both sides of the body.

It was questioned as to a central origin, and upon search, a scar was discovered more than an inch long, “close to the middle line and very near the coronal suture on the left side.

“Questioned as to this scar, the patient stated that it was produced more than ten years ago by striking his head against a stone while diving into shallow water. He wounded his head severely by the blow, and was ‘half-stunned’ thereby.

“ In 1873 he contracted syphilis, which was followed by sore throat, skin eruption, and loss of hair.

“ He says that he has ‘always’ been liable to headache, and that in November, 1885, these headaches became more severe, and were limited to that part of the head in the neighbourhood of the scar. These headaches were accompanied by giddiness, and, occasionally, when walking, he felt as if he were going to fall. The headaches continuing, he sought advice for them in March, 1886, and he was treated by mercurial inunction. About March 28 the headache diminished, but the torticollis commenced, and has continued ever since.

The spasms were so violent he was obliged to give up work, and went away for three weeks. He was then treated at the Bristol Infirmary by galvanism for three months, but without benefit. The use of a mechanical apparatus only made him worse. Tenotomy also failed to relieve him, and up to the time of his admission to University College Hospital every plan of treatment had proved useless.

“ His habits were moderate, but he appeared to drink and smoke more than was good for him under the circumstances. The tongue was coated. The optic discs were normal. There were no other facts in the family or personal history which seemed to be of any importance.

“ The spasm never occurred during sleep, and never woke him up. It seemed to disappear when he was quite quiet and composed himself to sleep, with the head and neck in absolute repose, and without a thought of voluntary effort. When he awoke the spasm began again gradually, and became most intense when he attempted to walk about or became mentally excited.

“ Although the spasm was terribly severe, and made his life a positive burden, it was curious to note how small a thing would control it. When, for example, the head was twisted with utmost violence to the right, a very slight amount of traction exercised upon the nose, either by himself or another, was sufficient to bring the chin to the middle line.

“ The faulty position of the head was easily rectified by the artificial stimulation of the antagonising muscles. Thus, if during the height of the spasm the rheophores of an induction battery were placed, the one upon the left splenius and the other upon the right sterno-mastoid, the position of the head was immediately rectified.

“ The application of the constant current, the positive pole being placed over the anterior superior angle of the *right* parietal bone, and the negative over the *left* splenius, also had

“the effect of counteracting the spasm and keeping the head
 “quiet. This effect of the constant current, even when very
 “weak, was most marked. The patient very distinctly stated
 “that he ‘derived great support’ from a small chain battery,
 “worn with its poles placed over sponges on the spots indicated.
 “The effect of electricity was transient, and produced no
 “permanent good. Both forms of current were, however,
 “employed during the greater part of his stay in hospital.

Eleven days after admission there was no improvement.
 The lesion was thought to be central for the following reasons.

“1st. There was the absence of any evidence of disease in
 “the nerves or muscles of either side, and the entire failure to
 “relieve the patient by local measures, such as electricity and
 “tenotomy.

“2ndly. It was evident that the source of the trouble was to
 “be looked for at some spot which, so to say, had command
 “of muscles on both sides of the body; and such a spot was
 “only to be found in the so-called motor area of the brain on
 “the left side.

“3rdly. We have the scar and the history of the injury which
 “caused it, combined with a record of syphilis, and trouble-
 “some headache referred to in the neighbourhood of the scar.

“4thly. The scar is situated over that portion of the cortex
 “cerebri which is said to be concerned with the function of
 “rotating the head to the opposite side, and it seemed probable
 “that some meningeal thickening was interfering with the
 “working of this area of the brain.

Treatment commenced with rest, bland and nourishing diet,
 no tobacco or stimulants, and the discontinuance of narcotics.
 “Counter-irritation was employed over the scar, first by means
 “of a blister, and subsequently by tincture of iodine. The
 “main indication in treatment seemed to be the administration
 “of mercury. This was commenced on August 10th by in-
 “unction, and on August 23rd, no constitutional effect having
 “been produced, one grain of hydrargyrum cum cretâ was
 “given three times daily. This was increased to three grains
 “three times a day on September 3rd, and as adjuvants a hot
 “bath was ordered daily, and one-third of a grain of calcium
 “sulphide with each dose of mercury. There being still no
 “soreness of the gums, on September 9th the dose of mercury
 “was further increased to four grains of hydrargyrum cum cretâ
 “three times daily. The gums then became slightly sore, and
 “on September 14th he suffered from a sharp dysenteric attack,
 “which lasted a few days. This reduced his strength some-
 “what, but the mercury being discontinued he soon recovered,
 “and on September 23rd it was noted that the spasm of the

“head was less violent, and from this date the torticollis
 “lessened day by day. He was discharged on September 30th
 “almost well, and a month later I had an opportunity of seeing
 “that his improvement was maintained.

It had been decided that if the mercurial treatment did not prove successful, trephining should be had recourse to.

The scar was “over the posterior ends of the superior and
 “middle frontal convolutions, and certainly within the area
 “(No. 12), which, according to Professor Ferrier, is associated
 “with lateral movements of the head and eyes and dilatation
 “of the pupil.

“In this case there was no deviation of the eyes nor dilatation
 “of the pupil, and this might be taken as an argument against
 “the hypothesis which has been put forward. Area No. 12, as
 “figured by Ferrier, is, however, a big one, and it is quite
 “reasonable to suppose that the movements with which it is
 “concerned are more specialized in man than in the monkey.

“Some of Mr. Horsley’s recent experiments point, I believe,
 “to the fact that stimulation of a spot in the cerebral cortex
 “in close proximity to that with which we have been dealing,
 “produces a rotation of the head to the opposite side without
 “any deviation of the eyes.

“This case, I am well aware, proves nothing; but I think
 “the hypothesis which I have put forward with regard to it is
 “at least warrantable. It will serve to direct the attention
 “of others to the point which I have mainly insisted upon,
 “and may lead to the elucidation of an obscure subject.

“The extreme severity of the spasm, and the fact that it
 “yielded to treatment, constitute in themselves a sufficient
 “reason for bringing the case before the Society.”

The above case takes a place by itself, and we may now consider the treatment of ordinary cases of Spasmodic Wry-neck.

Treatment by excision of a portion of the Spinal Accessory Nerve.—The complete failure of the treatment by drugs used internally and externally, and of electricity, to cure long-standing cases of Spasmodic Wry-neck led Mr. Campbell de Morgan, in the year 1866, to operate directly upon the nerve at fault, and he was the first surgeon who resorted to this operation.

His case, as recorded in the *British and Foreign Medico-Chirurgical Review*, vol. xxxviii. (1866), article iii., is here given in full :

“ Case of excision of a part of the Spinal Accessory Nerve for Spasmodic Wry-neck. By Campbell de Morgan, F.R.S.

“ William Bishop, æt. 32, a healthy labouring man, living in the country, was crushed down by the weight of a heavy ladder which he was attempting to lower. His neck was bent under it, but no particular injury appeared to have been done, and he paid small attention to the accident. This occurred in October, 1860. He does not seem to have noticed anything until nearly two months after, in December, when he became affected with twitchings in the neck. He thinks, however, that for some months before the accident there had at times been a tendency to jerking of the neck to one side.

“ These spasmodic attacks, at first occasional, rapidly became more powerful and continuous, so as, in the course of two or three weeks, to thoroughly unfit him for work. On the 29th January, 1861, he was admitted into the Middlesex Hospital.

“ His appearance was peculiar. There was an anxious worn look in the countenance which at times changed to a sort of sardonic smile, from spasm of the facial muscles. The eyes were constantly twitched towards the right. He could fix them by an effort for a short time, but the twitching soon recurred. The head was spasmodically drawn to the right side, and the right shoulder was at the same time raised towards it. There was with this a movement of rotation of the head, the chin being turned towards the point of the right shoulder, with the face looking directly over it.

“ The spasms were at times so violent as to draw the chin behind the line of the shoulder. The sterno-mastoid and the trapezius muscles were thrown into strong relief during the more violent spasms. The right shoulder was always on a higher level than the left, and this gave an appearance of distortion to the body, but the spine was quite straight.

“ Although the sterno-cleido-mastoid and trapezius muscles were apparently the seat of the most violent spasm, yet it was evident from the position of the head that their action was not the sole cause of the distortion. The combined action of these muscles would tend to bring the head down towards the shoulder, and to raise the shoulder itself, but at the same time to turn the chin towards the opposite side. The great pain which he suffered and the spasmodic contractions were due, probably, to the antagonistic action of several muscles, the splenius and the inferior oblique and the greater posterior rectus dragging the face round in opposition to the actions of the trapezius and sterno-cleido-mastoid. There was no affection of the muscles of mastication.

“By a very strong effort, and aided by the pressure of his hands, he could nearly but not quite, bring the head into its natural position; but this was in a few seconds followed by more severe spasms. Any attempt by others to restore the head to its position by external force gave rise to such violent muscular action in the neck as to make it insupportable. When the paroxysms were severe, he suffered very great pain, and he was never altogether free from discomfort.

“During sleep the head was sometimes, though rarely, quiet, and lay in a natural position, but generally it was twisted round, and at times the spasms came on so as to awaken him. Sometimes he was altogether prevented from sleeping by them.

“There was no appearance of disease or injury about the spine; the examination would bring on more powerful action, and thus produce pain; but the same would occur if any part of the right side of the neck were handled. He complained of pain down the back, but there was no particular tenderness in any part of it. His general health was impaired by the constant pain and loss of rest.

“The most careful examination failed to reveal any special point of irritation which might by reflex action give rise to these spasms. My impression was that they had a deep origin—the spinal accessory nerve, the abducens oculi, and some of the branches of the first and second cervical nerves being principally involved in their production. Whether they were reflex actions from some deep-seated irritation, perhaps within the spinal canal, or were set up by direct irritation in the nervous centres, could not be determined; the former view seemed the more probable.

“It would be needless to describe all that was attempted for his relief. For many months he was subjected to treatment local and general, but with no benefit. Counter-irritation to the neck and over the spine generally, ice, and heat to the spine, galvanism, electricity, the local application of belladonna, opium, veratrine, and such like agents; the internal use of a host of sedatives, antispasmodics, and alteratives were impotent. The subcutaneous injection of morphia certainly relieved him and procured sleep, but he was not essentially better after a prolonged trial of it. Chloroform readily affected him, and under its influence the spasms entirely gave way, but they returned with all their former violence when its effects had passed off.

“Then I determined to divide the sterno-cleido-mastoid muscle. It was not a case in which the same benefit could be expected from the operation as in ordinary Wry-neck.

“But one often sees that when a large class of muscles is
“affected by spasm induced by local irritation relief is given
“to all by the section of one of the antagonistic muscles chiefly
“involved. The operation was done by making a puncture at
“the inner side of the sternal tendon of the muscle, about a
“quarter of an inch from its origin, carefully carrying a blunt
“ended tenotomy knife flat along the posterior surface of the
“muscle, feeling the resistance of its fibres the whole way, and
“then turning the sharp edge towards the muscle and, rendering
“the fibres as tense as possible, cutting entirely through it. No
“bleeding took place. The extreme tension and spasm were
“at once markedly relaxed, but by no means entirely overcome.”
“After twenty-four hours an attempt was made to keep the head
“in a more natural position by means of a collar constructed for
“the purpose; but although it could be brought into position
“with much less difficulty than before the operation, and could
“be fixed in it by the collar, the spasms were yet strong enough
“to drag the head round towards the shoulder, and the pain
“from the resistance of the collar was too severe to be long
“sustained. This treatment was soon discontinued, as it
“evidently did harm.

“The muscle united quickly, and the spasms recurred with
“as much violence as before.

“The man’s health was giving way under the constant pain
“and irritation, and it was evident that it must eventually break
“down altogether, unless some decided relief could be obtained.
“The sterno-cleido-mastoid and trapezius muscles were clearly
“exercising a powerful traction on the head, and I thought
“that if their united action could be prevented, that of the
“antagonistic muscles, even if persistent, might be controlled
“or tolerated. I was encouraged in this opinion by having seen
“the relief which the division of the sterno-mastoid alone
“afforded to the patient.

“The division of the external branch of the spinal accessory
“and the removal of a part of the nerve seemed alone to promise
“the desired effect, and this operation I performed in February,
“1862.

“Before the operation I tried to ascertain on the dead subject
“the best mode of reaching the nerve as it lay imbedded in the
“upper part of the sterno-cleido-mastoid muscle. The following
“seemed the easiest, and was the one which I performed with
“little difficulty on the patient. An incision, two inches long,
“was made along the posterior border of the muscle, the centre
“of the incision corresponding to about the centre of its edge.
“The fascia being slit up to the same extent, the trapezial
“branch of the nerve was sought for as it emerges from the

“sterno-cleido-mastoid to cross the posterior triangle of the neck. It would be found generally a little above the centre of the incision. When found, the nerve was traced through the fibres of the muscle, the fibres being cut through much as is done in an ordinary anatomical dissection, until the common trunk above the division into the trapezial and sterno-mastoid branches was reached, and here a piece about a quarter of an inch in length was cut out. As the operation was of course done under chloroform, no effect was observable when the nerve was divided, the muscles were already thoroughly relaxed from its influence. On his recovery from the effects of the chloroform, the trapezius and sterno-cleido-mastoid were found to be completely paralyzed, and although there was still an occasional and slight convulsive movement of rotation of the head, it lay on the pillow in almost a natural position. There was no tendency whatever to undue action of the corresponding muscles on the opposite side. The respiration was not in any way affected, nor did he experience any peculiar sensation. All he did feel was relief from the extreme tension of the neck. The countenance was more tranquil than it had been for months. The wound healed without any trouble.

“When he got up, it was found that the head maintained nearly its natural position. He did not require any special support. There was still some slight action of the rotatory muscles of the head, the sterno-cleido-mastoid and trapezius remained perfectly flaccid, except at the back and upper part of the clavicular portion of the former muscle, which was tense and evidently acted when he attempted to bring the right ear down towards the shoulder.

“He soon began to regain flesh and strength. I kept him in the hospital for three months after the operation, and he was discharged in May, 1862, having been in the hospital upwards of sixteen months.

“On leaving the hospital he went down to the country, where he was soon able to resume his work as a labourer and thatcher.

“I heard of him from time to time, and in January, 1865, I sent for him to town in order to examine into his condition. He was looking healthy, the countenance was tranquil, the face turned directly forward, with the forehead and chin in a perpendicular line. Occasionally and for a few seconds there was a trifling twitch of the head towards the right side, with a little movement in the eyes. Any sudden touch or excitement would bring this on. The right arm hung listlessly against the side. The body was a little deflected from the perpendicular, so that a line dropped from the centre of the

“forehead fell an inch and a half to the left of the pubic symphysis. This was owing to a uniform and very trifling arching of the spinal column, the concavity being directed towards the left; there was no indication of a double curvature. The right shoulder and right nipple were about an inch higher than the left. This gave an appearance of increased size to the right side of the chest, but the measurements were the same on the two sides. The right shoulder, however, projected more from the side than the left. Measured either from the vertebra prominens or from the centre of the sternum, there was a good inch more of length to the tip of the acromion on the right than on the left side. This was due to the right shoulder being brought more to the horizontal position, while in the left shoulder the slope was perhaps greater than natural.

“The right sterno-cleido-mastoid muscle was completely wasted, except at its upper and posterior part; here for about the breadth of half an inch, and extending from behind the mastoid process to the middle of the posterior border of the muscle, it was nearly as large as on the opposite side. Towards its lower end this band of fibres, which contracted strongly on his moving his head, tapered off to a point.

“The trapezius was entirely wasted, a lamina not thicker than a shilling and quite flaccid could be felt in the neck, no contraction could be discovered in any part on his moving his head or shoulders. The rhomboid muscles could be seen in action below its dorsal part. These muscles were, I think, larger than natural. On the opposite side the trapezius was largely developed. On his raising the shoulders, the right was elevated by three-quarters of an inch more than the left, and although the trapezius was so wasted, the right shoulder when raised appeared fuller than the left.

“There was a little rotation of the right scapula, the inferior angle being tilted upwards and outwards, and the outer angle forwards.

“The right arm and forearm were as powerfully developed as the left; the deltoids were equal on the two sides, and no difference was observable between the two great serrati.

“His respiration was natural, and nothing peculiar was observed on his making a forced respiration.

“No alteration of sensibility was to be discovered in the neck and back.

“This is, I believe, the only instance of resection of the trunk of the external branch of the spinal accessory, and it is consequently interesting in a physiological as well as in a surgical point of view.

“The fact of the upper and posterior part of the sterno-cleido-mastoid muscle retaining its activity may be accounted for in two ways. First, by the existence of some twigs given off from the nerve to the muscle before its division into its two main branches. This is unusual, but is not improbably the real solution. The second explanation is, that as the nerve forms numerous connections with the cervical nerves, some of the branches may have supplied this part of the muscle. This is rendered improbable by the interesting fact that although both the sterno-cleido-mastoid and the trapezial branches of the spinal accessory are freely associated with the cervical nerves, every part of both these muscles, with the exception above noticed, was completely paralyzed. The muscles acted neither by volition nor in respiration.”

A few remarks follow regarding the function of the nerve. The author further states:—

“The rotation and elevation of the scapula were probably due to the action of the serratus magnus—unbalanced by the trapezius—but in some degree limited by the increased action of the rhomboids. The rhomboid muscles would prevent the serratus from drawing the scapula too much forwards, but would tend at the same time to elevate it; and the serratus magnus itself would, I believe, raise the outer angle of the scapula, as well as bring it forward if uncontrolled by the trapezius. The position of the body was a natural result of that of the shoulder. As the axis of the right shoulder from the spine to the acromion was an inch longer than that on the left side, the arm would hang at the end of a longer lever. To compensate for this, the body would necessarily be somewhat arched to the opposite side, as is done whenever the arm is kept extended.” (I am inclined to suggest that the cause of the arm being raised was due to the curvature of the spine, the latter having resulted from the former action of the spasms in keeping the arm raised. N.S.)

“In a surgical point of view the case is of interest, as one of unusual severity, and involving a large class of muscles. The pathology of Wry-neck from muscular action is but imperfectly understood. My belief is that the complaint is due to an irritation of the nerves in every instance in which inflammation or some disease of the muscles themselves has not preceded it. I doubt much whether, as is often alleged to be the case, it is ever caused by paralysis of the muscles of the opposite side. In the normal state of the muscles the paralysis of one class does not give rise to increased contraction of their antagonists. In facial paralysis the features are twisted; because in the actions of speaking and

“in the expression of the emotions the one set of muscles only
“is brought into play, and there is no power in the paralyzed
“muscles to oppose them or restore the equilibrium of the
“features. But even here, how commonly do we see the
“features maintaining their equilibrium unless disturbed by
“such emotional or volitional actions. After section of the
“tendons we do not find that a limb is drawn into an opposite
“direction.

“In the present case, of course, there could be no question
“as to such a cause. The spasms and the twisting of the
“neck were clearly due to some irritation affecting the nerves
“of a large class of muscles, and probably of a reflex character.
“The irritation was kept up by the very antagonism of the
“muscles brought into action. Had the seat of irritation been
“discoverable, and within the reach of treatment, no doubt
“the whole train of symptoms might have been combated.

“What ground was there then for believing that by paralyzing
“one set only of the spasmodically affected muscles relief
“would be given to the spasms in the other? Had the
“spasms had a central origin in the cord, I do not know that
“much benefit would have followed the operation. But there
“was the evidence that the symptoms were partially relieved
“so long as the sterno-mastoid remained ununited after its
“division. And it is well known that where a large class of
“muscles is involved in spasmodic action, arising from reflex
“irritation, the section of a single muscle will entirely remove
“it. In a paper which was published in the thirty-third volume
“of the *Medico-Chirurgical Transactions*, on the section of
“the tendo achillis in cases of fracture of the leg, complicated
“with spasms of all its muscles, this was clearly shown; and
“the operation has been often repeated with equal benefit.
“Had the cause of the irritation in the present case been of
“a merely temporary nature, the simple division of the sterno-
“cleido-mastoid would, perhaps, have been sufficient to quiet
“the muscles generally. The return of the spasms in all their
“former force, when the muscle had reunited, showed that
“little good could be expected from any temporary arrest of
“muscular action; and hence I resolved to paralyze completely
“and permanently the two powerful muscles, which were chiefly
“involved, and the nerves of which were within reach.

“With regard to the operation itself, I believe it will be
“found, should it ever be repeated, that the method I have
“indicated would be the simplest. The point at which the
“trapezial branch emerges from the sterno-mastoid muscle
“varies to the extent of an inch or more; but it can readily
“be found by exploring the edge of the muscle, and can then

“be easily traced back to the common trunk. There would be far more difficulty in finding the trunk by section through the upper part of the sterno-mastoid; for its situation is variable—sometimes it lies deep within the muscle, sometimes it lies close upon the inner surface. The attempt to reach the nerve by sub-cutaneous incision would, I think, be hardly advisable.”

Another case of severe spasmodic contraction of the cervical muscles came under the care of Mr. Campbell de Morgan in the Middlesex Hospital.¹

It was a labourer aged 38, health good, with exception of occasional headache and choreic movements of right arm and hand dating from birth. These movements interfered with writing or delicate movements, but not with hard manual work. Working in the rain and snow one day his back got chilled, and his headache came on badly. To relieve this, as he was in the habit of doing, he sluiced his head with cold water. As the chill passed off he felt a *pulling* sensation at the back of the head on the right side about midway between the mastoid process and the occipital protuberance. From that time (eighteen months previous) he has suffered from a spasmodic affection of the muscles of the head.” The report states, that while at rest the spasms are very slight, but “so soon as he begins to use the back or to walk, the head gets drawn round towards the right side, and this increases more and more as he moves, so that by the time he has taken a dozen steps the chin is turned towards the level of the shoulder, and is at the same time a little raised by the dragging down of the head towards the opposite side. The facial muscles are also affected, so that the features and eyes are drawn towards the right side. The pain becomes so severe that he is forced to stop, and he then has to drag the head back to its position with his hands. It is not simply the pain of cramp, but there is acute pain at the spot before mentioned between the mastoid process and the occipital tuberosity. This point is always the seat of a certain amount of pain and tenderness. If the condition of the muscles is examined during the spasm, it is found that the left sterno-mastoid and the right trapezius are rigid, the left trapezius being unaffected. Some of the deeper muscles are probably affected as well.

¹ *Lancet*, August 3rd, 1867.

“ Some curious facts are seen in connection with the excitation of the muscles. If he keeps the arms above the head, he can walk for some time without the spasm coming on; so too, if the left sterno-mastoid be grasped, he can walk with little inconvenience; but on suddenly letting it go, violent spasm would ensue, the pain becoming very intense.”

Other treatment having failed, Mr. Campbell de Morgan excised a portion of the spinal accessory on the left side. This operation destroyed the spasm of the left sterno-mastoid, but left the patient unrelieved from the action of the posterior rotators on the right side.

In this case operation upon the posterior branches of the cervical nerves supplying the muscles which still acted spasmodically would almost without doubt have completed the cure.

The following six cases are collected by Mr. Bowlby in his work “Injuries and Diseases of Nerves.”

“ 1. *Sands*.¹—*Excision of a portion of the spinal accessory nerve for Spasmodic Wry-neck.*

“ The patient was a man, aged 39, who came under observation in May, 1882. The wry-neck was of 9 months’ duration. Various local and internal remedies had been tried in vain. Three inches of the spinal accessory nerve were removed. The wound healed in nine days. Soon after the operation the contraction of the muscle gave way, but the sterno-mastoid remained paralyzed and atrophied. For some time afterwards there was a certain inclination of the head to one side, but it gradually yielded.”

[There seems to be some mistake about the length of nerve removed, as it cannot have been as much as three inches.—N.S.]

“ 2. *Sands*.—*Excision of a portion of the spinal accessory nerve for Spasmodic Wry-neck.*

“ In a patient, aged 31, suffering from wry-neck, half an inch of the spinal accessory nerve was resected. The wound healed well. For some weeks the patient had difficulty in keeping his head straight, but he finally was completely cured.”

“ 3. *Tillaux*.²—*Resection of the spinal accessory nerve for Wry-neck.*

“ The patient was a woman, aged 32, who suffered from a peculiar form of Spasmodic Wry-neck. After treatment by

¹ *Rev. des Sci. Méd.* 1884, vol. xxiv. p. 296.

² *Gazette des Hôpitaux*, 1882, p. 109.

“galvanism without benefit, it was decided to operate upon the spinal accessory nerve. Before operating M. Tillaux experimented upon a dead body, and found that when he stretched the spinal accessory nerve there was distinct dragging upon the medulla. For this reason he did not stretch the nerve, but removed a portion of it from the posterior border of the sterno-mastoid. The operation was followed by much relief to the previous symptoms, but not by a complete cure.”

[In removing a portion of the nerve from the *posterior* border of the muscle it was not likely that all the spasm would be removed, and therefore “much relief” is all that could be expected, besides this there was possibly spasm in the posterior rotators also.—N.S.]

“4. Hansen.¹—*Stretching and excision of a portion of the spinal accessory nerve for Wry-neck.*

“A woman, aged 32, had suffered for six months from Spasmodic Torticollis. The spinal accessory nerve was exposed at the posterior border of the sterno-mastoid muscle, was first vigorously stretched, and then twelve millimetres were excised. The spasms ceased.”

“5. Hansen.²—*Stretching and excision of a portion of the spinal accessory nerve for Wry-neck.*

“A woman, aged 30, had suffered for a year and a half from Spasmodic Wry-neck. The spinal accessory nerve was stretched and thirteen millimetres were excised. Slight spasms continued for one month. After this time recovery was complete.”

The above five cases may be taken as instances of absolutely satisfactory results following excision of a portion of the nerve, the partial relief in the case reported by M. Tillaux seems to be accounted for by the fact that the nerve was not excised sufficiently high, that is to say, not before it sends branches to the sterno-mastoid.

Mr. Bowlby then quotes a case treated by stretching the nerve only.³ “At first there was improvement, but some weeks later the patient was as bad as previously,” but he adds with regard to *nerve stretching* and *neurectomy* for this affection, that both of these operations “may claim to have given relief, but that each of them also has failed in other cases”; but it seems to me

¹ Quoted by Fenger and Lee.

² *Loc. cit.*

³ *Rev. des Sci. Méd.* 1884, vol. xxiv. p. 298.

that this opinion is not in accordance with the reports which he furnishes, for, as I have just stated, all the cases of neurectomy were successful.

Mr. Ballance¹ describes a case in which operation was successful. The following is an abbreviated quotation from his paper.

A lady, aged 48, had been married for eleven years and a half, and had never been pregnant. She limped slightly, due to the effects of infantile paralysis affecting the right leg, but she had never had any other serious illness. Eighteen months after marriage she began to suffer from spasms in the neck which caused the face to turn towards the left shoulder. The spasm in the neck had been most severe during the latter ten months, interfering seriously with the taking of sufficient nourishment, and almost entirely preventing sleep. During this time she had not been out of doors, not liking to be seen by strangers, moreover her strength had so failed that it was an effort even to cross the room. The increasing bodily weakness during the last two or three months was the cause of much anxiety. All palliative measures, drugs, electricity, massage, had been tried without avail. She had been constantly under medical care during the whole time (12 years).

There was great pain in the back of the head, the right side of the neck, and down the middle of the front of the chest. The right sterno-mastoid was seen and felt to be strongly contracted, causing a considerable prominence upon the side of the neck. The upper portion of the right trapezius was also extremely hard and contracted. The head could not be turned towards the right voluntarily. She had not been able to get her head straight for ten years. The spasm was constant except during sleep, and was liable to frequent exacerbations. Very little sleep was obtained, the husband said that his wife was tossing about all night in the vain endeavour to avoid spasm, and obtain for the head a position of rest. When the spasm was exaggerated by, *e.g.* a sudden noise, some twitches of the muscles of the face and eyes were noticed.

January 31st.—Under ether, a portion of the nerve, one inch in length, was excised, and the proximal end was then subjected to a considerable stretching force. The wound was dressed antiseptically. The result of this operation was

¹ *St. Thomas's Hospital Reports*, 1884.

that the spasms almost entirely ceased, the patient losing all her pain, and her health being restored. The patient became able to turn her head easily to the right without any spasm occurring.

The right scapula was slightly rotated and raised. This position becoming much more evident on raising the arms to or above the horizontal line. There was no impairment of the movements or interference with the strength of the arm, and no curvature of the spine. There was no loss of sensation, and the patient expressed herself as daily getting better and stronger.

The operation was, upon the whole, successful, but left some spasm in the muscles supplied by the upper spinal nerves. The writer remarked upon this, "The small muscles which rotate the head so that the face looks over the left shoulder are the left inferior oblique and the left rectus capitis posticus major, which receive their nerve supply from the posterior primary division of the left suboccipital nerve. The motor impulse which causes contraction of the muscles which extend the head, *e.g.* on the left side the rectus capitis posticus minor, the superior oblique and the complexus, traverses this same nerve which conveys the orders to the rotatory muscles. Other larger muscles, such as the splenius, trachelo-mastoid and complexus, which tend either to rotate or extend the head, are supplied by the succeeding posterior primary divisions. The deep connection, however, of the spinal accessory with the first cervical nerve is probably more intimate than its connections with the other spinal nerves."

"The patient now seems unable to extend her head beyond a certain limited amount without causing at the same time a slight tendency to rotatory spasm in muscles, which are evidently not powerful, and which are certainly too deep for palpation. I think it probable therefore that the deep origin of the posterior primary division of the left suboccipital nerve is exposed to the same irritation as the deep origin of the right spinal accessory nerve. The deep origin of those fibres of the posterior primary division of the right suboccipital nerve, distributed to muscles which extend the head, may likewise be subject to the same influence, as may be also the trapezial fibres of the left spinal accessory, as evidenced by the transient contraction of the left trapezius, noted the day after the operation. The spinal accessory is within easy reach of the surgeon. It is a question whether, in intractable cases of spasmodic wry-neck, in which the general health is much interfered with, an attempt should not be made to reach the suboccipital nerve."

The microscopical examination of the excised portion of nerve did not reveal anything abnormal.

The writer further remarked that Mr. Jacobson, of Guy's Hospital, excised a portion of the left spinal accessory in a middle-aged woman. "The operation only gave temporary relief, as other muscles became affected. Mr. Jacobson adopted the incision at the posterior border of the muscle, following the nerve forwards and upwards through the muscular fibres."

"At the meeting of the Manchester Medical Society last April (1884) Mr. Hardie related one case and Mr. Southan two cases of Spasmodic Torticollis which had been successfully treated by section of the spinal accessory." . . . "Professor Thiersh years ago operated with success upon an Oriental, dividing the spinal accessory and several cervical nerves on both sides of the neck for the relief of spasmodic contractions, which produced nodding movements of the head or 'salaam spasm.'"

Case of Spasmodic Wry-neck successfully treated by division of the spinal accessory nerve at the Royal Infirmary, Edinburgh, after failure of stretching.¹ (Under the care of Professor Annandale.)

Mr. James Bennet, M.B., resident surgeon, supplied notes of Mr. Annandale's case, which he first saw Feb. 7th, 1878. The patient, a female, aged 24, had been subjected to general remedies for three months without effect. "The patient was employed in a power-loom factory, where, in order to follow the movements of a shuttle, it was necessary for her to keep continually turning her head from side to side, and especially to the left. After a spell of unusually hard work the patient began to experience a constant sensation of discomfort and uneasiness in the neck, accompanied by occasional twitching movements. The head seemed to be drawn somewhat towards the left side, and on moving it the patient found that additional effort was required to subdue the jerking movements, which tended to return it to its former position. The rotation of the head towards the left soon became more marked, and the spasmodic movements increased in violence and frequency.

"While at rest the head assumed the position of rotation to the left and was depressed towards the left shoulder, which was elevated to meet it. She was generally to be seen sitting with her chin supported on her left hand, looking over her

¹ *Lancet*, April 19th, 1879.

“left shoulder. Any movement of the head from this position
“at once excited the spasmodic movements. These consisted
“in a series of jerks, becoming more violent as they lasted,
“by which the head was brought round to the left from any
“position of rotation towards the right. Though much relief
“was obtained by avoiding bodily or mental effort, yet it was
“only during sleep that complete quiet was obtained.

“The difficulty of determining the muscles primarily affected
“was unusually great, yet by observing during the attack the
“superficial muscles thrown into contraction, the position as-
“sumed by the head, and the situation to which the pain was
“referred, it seemed probable that the following were the
“groups of muscles chiefly involved:—First, the left obliquus
“inferior, rectus capitis posticus major, and splenius, which
“rotate the head towards the left; and, secondly, the left
“sterno-mastoid and trapezius which depress the head towards
“the left shoulder and rotate it to the right. The clonic
“spasms appeared to be due to the alternating action of these
“two groups of muscles. The case seemed to be one in which
“overwork had induced a state of, as had been designated by
“Dr. Poore, ‘chronic fatigue or irritable weakness’ in at least
“two opposing groups of muscles, those most used by the
“patient, as a result of which they had become liable to
“spasmodic action. The most certain means of inducing the
“clonic spasms was any attempt to perform the habitual move-
“ment—in other words, to use either group of affected muscles.

“The explanation of the other marked feature of the disease
“—the permanent deformity—follows from this; it was *assumed*
“because by it the greatest possible amount of relaxation of
“both groups of muscles at one time was obtained; the rotation
“of the head to the left relaxed the first, and the approximation
“of the head to the shoulder the second group. The adoption
“of this position was an attempt to abstain from using either
“group of muscles, and so to avoid the action of the most
“powerful cause of the spasms. All this naturally indicated
“the necessity for more complete rest, such as might be
“obtained by paralyzing one group of muscles. In order to
“effect this the following operation was performed:—On
“Friday, 10th, an incision was made from below the tip of the
“mastoid process on the left side, extending downwards for
“about three inches along the anterior border of the sterno-
“mastoid muscle. The border of the muscle was cleared, and
“some of its fibres divided transversely and turned aside. The
“left spinal accessory nerve was exposed and stretched, and,
“in case of section, if it should afterwards be deemed advisable,
“a silk ligature was applied loosely round it. The wound was

“ then closed, the ends of the ligature being brought out at its lower angle.

“ No beneficial change whatever followed this procedure; accordingly, on the following day, Professor Annandale removed the stitches from the wound, and, by means of the silk ligature, brought the nerve within reach, *divided* it, and, after separating the divided ends, removed the ligature and closed the wound. A few hours after section of the nerve had been accomplished, when the patient was able to sit up, it was found that she could move her head slowly round to the right, and could keep her face looking steadily forwards. During the healing of the wound she continued to acquire steadiness and freedom of movement of the head up to the time of her dismissal on the 16th March.”

The patient was seen in March, 1879, a year after the operation, when she was found to be free from any symptoms of the disease from which she had formerly suffered. The sterno-mastoid and trapezius muscles on the left side were then as well developed as on the right, and the appearance and movements of the neck and shoulders were absolutely normal. In the interval she had resumed her employment, and had only left it on account of her marriage.

I will now describe my first case of operation for this affection.

CASE I.—Spasmodic Wry-neck cured by excision of a piece of the spinal accessory, and of the posterior branches of some of the cervical nerves. By Noble Smith, surgeon to All Saints' Children's Hospital. An abbreviated account of this case was published by me in the *British Medical Journal* for April 4th, 1891.

The case in which excision of the spinal accessory nerve was first performed for Spasmodic Wry-neck, by Mr. Campbell de Morgan, has been quoted above in full. That case was an unusual one because the spasms existed in the sterno-mastoid and trapezius muscles on the right side, and yet the head was drawn into the position which is usual in contraction of the muscles on the left side; that is, the face was turned towards the right shoulder. The splenius and other rotatory muscles on the same side were also affected, and this overcame the action of the sterno-mastoid and trapezius muscles, so that, as the report states, the posterior muscles were “drawing the face round in opposition to the actions of the trapezius and sterno-mastoid.” The fact that section of the spinal accessory had the effect of entirely removing the spasms of muscles which were not dependent upon this nerve for their action

is very important, and it is one which, in reports of such cases, has not been, I think, sufficiently noticed.

The lady whose case is the subject of this communication, was 41 years of age and was sent to me by Dr. Mahomet, of Bournemouth. She had suffered for sixteen years from severe Spasmodic Wry-neck, commencing a few weeks after a strain of the neck in trying to get into a boat. It was spasmodic from the beginning, increased after the first few years, and got very much worse about a year and three months before I saw her, when it had become so bad that a plastic felt jacket was applied. The jacket, however, did no good and injured the health from the heat and irritation set up by it.

When I first saw the patient (October 30th, 1889) the head was bent laterally towards the right, so that the cervical part of the spine was curved very severely to the left. There was constant and very violent spasmodic action of the *left* sterno-mastoid and upper part of the left trapezius muscles drawing the face towards the right shoulder. There was also spasmodic action in the splenius capitis and other muscles on the *right* side of the neck, these producing the same inclination of the head as the muscles already named of the opposite side. For four months I tried the effect of fixation and medicinal remedies. The effect of a supporting instrument was decidedly beneficial, but it only partly controlled the spasmodic action. I then proposed to stretch the spinal accessory nerve. The reasons why I did not at once perform excision of part of the nerve were as follows: In the first place, although the records of treatment tended to show that the spasms, even those extending to other muscles, might be subdued by paralysis of the sterno-mastoid and trapezius, yet it did not follow that such would be the case here as the rotators on the opposite side of the neck were acting very strongly. Moreover, I feared that it was possible that loss of muscular power, caused by the paralysis, might make the condition worse by allowing the head to drop further over to the right side. Then, again, I did not feel certain to what extent the loss of power from paralysis would influence the movements of the arm and head. Mr. Campbell de Morgan's case, which is one of the best recorded, certainly states that the patient was able to follow his employment as a labourer afterwards, but in some instances it seemed that there was a certain amount of weakness felt for a time; there was also the fact that some cases seemed to have been cured by stretching.

On March 6th, 1890, I made an incision two inches long, from below the lobe of the left ear downwards, over the anterior edge of the sterno-mastoid muscle. I exposed the posterior

belly of the digastric and also the stylo-hyoid muscle. I found the nerve with my finger beneath the sterno-mastoid muscle, and passed a blunt hook behind the nerve and drew it forward into sight. I separated the nerve upwards and downwards about a quarter of an inch each way, severed some filaments that were entering the muscle, and then stretched the nerve firmly. The patient made an excellent recovery, the wound healing in four days, the temperature never rising above normal. The patient experienced no pain, only a little stiffness in the neck, and a weakness in this part upon attempting to move.

The immediate result of this operation was decidedly favourable; the spasms were less severe, and the patient expressed herself as feeling great relief, and this relief seemed to be extended to all the muscles that acted spasmodically. This relief, however, soon began to wear off and it became evident, in about a week, that further measures were necessary. Excision of a part of the nerve was then determined upon.

On April 22nd I again cut down upon the spinal accessory in the same position, that is, in front of the sterno-mastoid, and excised a piece of the nerve a third of an inch long (Mr. Campbell de Morgan excised a quarter of an inch), the two cut ends retracted, leaving a wider gap between them. The wound healed as before in a few days without any rise in temperature. The result of this operation was complete paralysis of the sterno-mastoid and trapezius, and a feeling of immense relief to the patient, as the spasms were very greatly lessened. The patient was up and about a week after the operation, and could now turn the head easily to the left side and control it in that position; in fact, she could hold it for a short time in any position she liked, but the spasms upon the right side continued, the splenius capitis being the greatest offender.

After waiting a few weeks and finding there was no further improvement, it was determined to operate upon the posterior branches of the cervical nerves upon the right side.

On May 28th, 1890, I made an incision from the occiput downwards for about three inches, parallel to and about an inch to the right of the spinous processes; through the trapezius down to the edge of the splenius, some of the fibres of which muscle I had subsequently to divide to enlarge the wound, then through the complexus, and eventually exposed the posterior branches of the cervical nerves. The great occipital nerve then came into view, and this I had to separate from its attachments and draw aside. I excised a piece of the external division of this nerve, also of the third and fourth posterior branches. Considering the extensive connection of nerves in this part, I thought it well to separate the splenius from parts beneath

it, and search for and excise all filaments of nerve passing into that muscle. I also acted in the same manner as regards the complexus. I had intended to try and excise a piece of the suboccipital nerve, but having already made a rather deep dissection, and found that some veins interfered with such further operation, I desisted from doing any more. This operation was recovered from as rapidly and as satisfactorily as the others, and to the great satisfaction of the patient and myself all spasmodic action was practically put an end to. The night of the operation the patient, for the first time for sixteen years, was able to rest her head on her pillow without spasmodic action. This good result has continued. There is an occasional slight twitch of the head to the right, caused doubtless by the deepest layer of the rotators supplied by the suboccipital nerve, but this action is very trifling and is thought nothing of by the patient, after her long period of severe spasm. This slight spasm subsequently ceased.

A very important point in respect to these operations is one which I had all along been anxious about, and that was the loss of power from the muscular paralysis. This loss of power has proved to be very slight indeed, and the patient expresses herself as experiencing no discomfort or disability. She cannot lift the left hand quite as high above her head as she can the right, nor quite so far backwards, but she can use it as freely to any part of the head, or in any way that she usually requires. The paralysis on the right side of the neck from the last operation appears to cause no loss of control whatever.

Upon this point it may be stated that these operations may be freely undertaken without fear as to any weakness or loss of power that might be expected. Of course there will be a wasting of the paralyzed muscles; but to counterbalance this condition, there has been in this patient so marked an improvement in her figure, including almost complete removal of the curvature of the neck, that any little differences that may remain in the size of the shoulders will be a very unimportant matter.

Since writing the above I have received a letter from the patient of which the following are extracts: ". . . All at home "are very pleased. . . . I have returned to the days of my "youth and began croquet again. . . . My left hand I can do "anything with now, and use dumb bells. . . . I can do every- "thing for myself, my father is especially pleased as he had "lost hope for a long time. . . . I thought you would like "to know . . . that the operations have been so successful."

I saw this patient again a year after the operation, and she remained quite well.

The following was published six months after my paper upon the subject was in the hands of the Editor of the *British Medical Journal*. The delay in publishing my case arose from the pressure upon the pages of the *Journal* caused by the reports upon Prof. Koch's remedy for Tuberculosis.

From Supplement to *British Medical Journal*, March 21, 1891.

"A New Operation for Spasmodic Wry-neck.—Dr. W. W. Keen has lately published (*Annals of Surgery*, January) a paper read before the Philadelphia Neurological Society on a new operation for spasmodic wry-neck. This consists in division or exsection of the nerves supplying the posterior rotator muscles of the head. After having made a number of dissections, the author formulated the steps of an operation which he has repeatedly done on the cadaver, and once on the living subject. The nerves to be resected in this operation are the posterior divisions of the first three cervical nerves, by which the chief posterior rotators of the head, namely, the splenius capitis, the rectus capitis posticus major, and the obliquus inferior, are supplied. The external incision is a transverse one about two and a half or three inches long, made about half an inch below the level of the lobule of the ear, from the middle line of the neck posteriorly. The trapezius is divided transversely, and afterwards the complexus, care being taken to spare the great occipital nerve. The posterior division of the second cervical nerve is then divided or exsected. The suboccipital nerve is next looked for in the suboccipital triangle, and traced down to the spine and divided. The external trunk of the posterior division of the third cervical nerve is then exposed below the great occipital, and divided close to the bifurcation of the nerve trunk. The only difficulty in Dr. Keen's case was the depth of the wound, which made it troublesome to get a good light, and rendered the mechanical steps of the operation rather difficult. The hæmorrhage, though free, could be easily controlled."

In my case above recorded, p. 46, the wound was certainly deep, but there was no great difficulty as regards light. I think that the vertical incision which I made more likely to facilitate the operation than the transverse made by Dr. Keen.

Three cases were reported in the *British Medical Journal* for Jan. 31st, 1891. By Mr. Southam, of Manchester.

"In each instance the spasm, which chiefly involved the sterno-mastoid, was of a severe nature, quite incapacitating

WASG : MA :

“ the patients from following their occupation ; it had come
 “ on without any apparent cause, had been present for some
 “ months, and had resisted all the ordinary methods of treat-
 “ ment, for example, large doses of bromide of potassium,
 “ galvanism, massage, counter-irritation, etc. Two of the
 “ patients had been specially sent to my colleague, Dr. Ross,
 “ to receive the benefit of his advice, and it was at his suggestion
 “ that neurectomy was performed.

“ CASE 1.—Female, aged 31 years, admitted April 27th, 1889,
 “ suffering from tonic contraction of the right sterno-mastoid
 “ muscle. She enjoyed good health until about six months
 “ previously, when the head became gradually rotated to the
 “ left and drawn over to the right side. When admitted the
 “ right ear was almost in contact with the shoulder, and she
 “ complained of severe pain in the neck on the same side. May
 “ 29th neurectomy was performed.

“ CASE 2.—Male, aged 35 years, admitted April 25th, 1890.
 “ In this patient the spasm, which had been present for about
 “ five months, in addition to the left sterno-mastoid, involved
 “ slightly the trapezius and scaleni on the same side. Some
 “ clonic spasm was also present, so that the head was not only
 “ drawn over to one side, but it also exhibited a constant rota-
 “ tory movement. May 27th neurectomy was performed.

“ CASE 3.—Male, aged 24 years, admitted September 16th,
 “ 1890. The spasm had been present for about three months,
 “ and the condition was almost identical with that met with
 “ in Case 2. October 4th neurectomy was performed.

“ *Present Condition.*—In Cases 1, 2, where intervals of eighteen
 “ and six months have elapsed since the operations, the head can
 “ now be held quite straight, and the patients are following their
 “ occupation as usual. Occasionally, and generally towards
 “ evening, when tired and exhausted with their day's work,
 “ there is a slight tendency for the spasm to recur ; this is,
 “ however, becoming less marked and less frequent (especially
 “ in Case 1) as time goes on, and can always be overcome by
 “ an effort of the will. In Case 3, where a month has now
 “ elapsed, the head is almost straight, and though it still requires
 “ some effort to keep it so for any length of time when the
 “ apparatus is left off, the condition of the patient is daily
 “ improving.”

He had performed the operation upon four other patients with
 success.

Treatment by ligature. By Mr. Mayo Collier.¹

A. W., a fairly healthy-looking girl, aged 21, the family and
 personal history remarkably free from any neurotic or other

¹ *Lancet*, June 21st, 1890.

complaints. The affection dated from 1883. She had been treated by innumerable drugs, galvanism, blisters and removal of tonsils and galvano-cautery applied to the back of the throat without beneficial results. Mr. Collier approached the spinal accessory nerve at the point of its emergence from the outer border of the sterno-mastoid muscle, tunnelling through the muscle for some distance, applying moderate traction on the nerve, but avoiding injury as far as possible to the muscle. A loop of silver wire was then placed round the nerve as high as he could reach, the end being twisted so as to insure slight compression. "On recovery from the chloroform the spasms had entirely ceased. The wound subsequently healed by first intention." A year later the patient remained well.

Regarding this case I wrote to the *Lancet*¹ as follows:

"Sirs,—It would add to the value of Mr. Collier's notes upon this subject if he were to state whether the sterno-mastoid and the trapezius remain fully capable of action or not. He states that 'nothing seemed amiss with these muscles (because?) the patient could rotate her head and retain it in any position.' This result might remain although the muscles were paralyzed. I have lately operated upon a case of very severe Spasmodic Wry-neck by excision of a portion of the spinal accessory nerve, and also at a subsequent operation by excision of portions of the posterior branches of some of the cervical nerves, as there was spasm of the rotators on the opposite side. The result of these operations was perfectly satisfactory as regards the spasms, and left no appreciable difficulty in the movements of the head, the patient being able to rotate and retain the head in any position she pleased. I cut down upon the spinal accessory in front of the sterno-mastoid, which seems to me a more satisfactory proceeding than following it through the muscle from below.

"I am, Sirs, yours faithfully,

(Signed) NOBLE SMITH."

To which Mr. Collier replied,²

"Sirs,—I intended to convey to your readers that nothing was amiss so far as I could judge, with the parts in question. Sending (Attacking?) the nerve from the anterior border is a much more difficult and less certain procedure.

"I am, Sirs, yours faithfully,

(Signed) MAYO COLLIER."

¹ *Lancet*, June 28th, 1890.

² *Lancet*, July 5th, 1890.

To reach the nerve from the anterior border is undoubtedly more difficult than an operation from below, but I cannot agree that it is a "less certain procedure." Upon the contrary, my object in operating from above has been to avoid missing any fibres supplying the sterno-mastoid, and thus to make the operation the *more* certain.

SPASMODIC MOVEMENTS OF THE NECK, HEAD AND FACE, WITHOUT WRY-NECK.

I am not able to discuss the pathology of these obscure cases, but the similarity of the Spasms to those already described, coupled with the results obtained in the following case, led me to hope that in some instances, at least, when other remedies had failed, a resort to surgical interference might prove successful.

CASE II.—Spasmodic nodding movements of the head and neck, and spasms of the facial muscles.

Mr. S., æt. 57, was brought to me on September 30, 1890, by Dr. Alfred Barratt, of Birmingham. Spasms first commenced six years ago, affecting the right side of the neck; these soon extended to the left side, and to the muscles of the front of the neck. This patient was said to have led a regular and healthy life, and to have worked hard. No cause for the affection was known. While in repose the head remained quiet, but upon the least exertion or movement the spasms immediately commenced. Reading and writing especially excited the action; eating had a similar effect, and any sudden excitement brought on the spasms rapidly. When the action was once started the head nodded continuously, and sometimes violently, the movements of the facial muscles producing blinking and twitching of the eyes, and dragging upwards of the corners of the mouth, giving to the patient a curious sardonic expression. There were also spasms of the posterior portions of the trapezial muscles involving about the central two inches at the occiput. The chin struck the chest during the forward spasms.

The various drugs that have been used in cases of Spasmodic Wry-neck had been tried thoroughly, but no good had resulted, and electricity in its various forms had been persistently tried at intervals for twelve months without effect. My opinion was asked as to the probability of benefit from operation. It did not seem to be a favourable case for this treatment, and I hesitated to advise it, but I thought that a chance

of success existed for the following reasons: First, the spasms had commenced in the right sterno-mastoid muscle; and, secondly, in other cases, and especially in Campbell de Morgan's, in which the spasms of the face were very similar, the beneficial results were not limited to the muscles supplied by the nerve operated upon. After a consultation with Dr. Gowers, who was in favour of operation, the patient elected to subject himself to the treatment on the chance of some good resulting.

I therefore cut down in front of the muscle as in my previous operations, and excised a portion of the nerve of the right side. The wound healed rapidly, and the patient had quite recovered from the operation a week afterwards. For the first ten days the nodding movements were worse than before, but the patient felt a relief from the sensation of the dragging forwards of the head. He went home to Birmingham, and a few weeks subsequently I heard from Dr. Barratt that he was very much better. Upon later enquiry I received a letter from Dr. Barratt, in which he stated: "Mr. S., so far as the operation went, "is all that you could desire: the terrible agony and distortion "are gone. When he attempts to look downwards there is "a great (spasmodic) effort, over which he has little control, "to drag down and retain the chin upon the chest in a straight "line, but this is gradually ceasing. So long as he keeps the "head upwards, that is, in a natural position, all is well."

At a later date I received a letter from the patient himself which showed that he continued to improve until he became practically well. As follows:

"BIRMINGHAM, *June 24, 1891.*

"Dear Mr. Smith,— The side of the head on which
"you operated I think now perfectly cured; for I have no
"tremor, jerking contortions, or dragging of the head on to
"the shoulder, neither do I feel any inconvenience in any way
"from the result of the operation. I can raise the arm easily
"as before, and carry the same weight in one hand as the other.
"I walk comfortably with my head upright, and steady, without
"any effort. I can also read and write comfortably well, which I
"could not do before the operation, only under the greatest
"difficulty and agony.

"I occasionally get some trouble on the other side of my
"head only when walking, in the way of a slight tremor and
"twitching, and a difficulty in keeping the eye open, but not
"near to the same extent as before the operation; but I am in
"hopes of this improving with time. You will therefore gather
"how pleased, thankful, and satisfied I am with the result of

“the operation for which believe me, most sincerely, a very grateful patient,—W. S.”

In a subsequent letter he adds: “There are no remaining facial or other spasms whatever.”

We should always bear in mind the possibility of Spasmodic Wry-neck and allied affections, being the precursors of more serious nervous disorder. There is an instance given by Dr. Wilks in his “Diseases of the Nervous System,” second edition. He states (p. 580), “One of the most frightful cases of spasmodic contortions I have ever seen began with wry-neck; subsequently other muscles of the trunk became affected; the patient had then sudden violent paroxysms in which the body was twisted round in a most extraordinary shape. At last she died, worn out.” Whether an operation in an early stage of such a case might stay the morbid process is more than I can conjecture, but the chance of such a favourable result, and the certainty of relieving at least the wry-neck spasms should encourage us to operate before the patient is “worn out” by the disease.

In conclusion I would add that: As a nervous disorder Spasmodic Wry-neck probably more frequently comes before the physician than the surgeon, and it is perhaps natural that the former should not readily look to surgical procedures to obtain a remedy for this affection.

The fact that the disease is obscure, as to its origin, leads the physician to seek for an elucidation of its nature before he is inclined to relegate the patient to the surgeon to undergo an operation which probably leaves the original disease untouched.

This course may be scientific, but it is hardly satisfactory to the sufferer.

The fact that operation can relieve the patient from his suffering at once, and that in many cases, if not in all, the good result will remain permanent, must, I would submit, outweigh any objection that can be raised against it.

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